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ABSTRACT

To determine whether high creative and low creative children achieved differently when utilizing a divergent method of teaching as opposed to a convergent method of teaching as evidenced by achievement in spelling, a study, conducted for a period of 18 weeks, involved 79 third grade children randomly assigned into four sections. Two pretests were administered to identify the creativity of the children and to determine their achievement in spelling, and a posttest was administered at the conclusion of the study. The major emphasis placed on the two convergent methods groups was upon acquiring and applying phonetic rules and generalizations to the list of words to be mastered. The divergent methods groups used fewer structured learning activities. This method was student-centered in that the children were allowed to choose any means available to master the words. Three conclusions were derived from the results: (1) there is no signficant difference in achievement between the high creative and low creative children; (2) there is no significant difference in achievement between children taught by a convergent method and children taught by a divergent method; and (3) there is no significant interaction between teaching method and creativity. (HOD)

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Convergent and Divergent Methods of Teaching Spelling In Relation to Creativity

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Convergent and Divergent Methods of Teaching Spelling

In Relation to Creativity

May 14, 1982

In reviewing the related literature concerning the identification of the creatively gifted child, the survival, and continous development of this creativity, a need for research concerning the teaching methodology to enhance this creative ability is indicated. Do creative children achieve more when they are taught by a divergent method as opposed to a convergent method? To study this problem groups of children were taught spelling utilizing a divergent method and a convergent method. Spelling was chosen because it lends itself well to convergent and divergent methodology.

Hill and Martinis (4) instigated a relatively unstructured action-research project to determine the effectiveness of a multisensory method of teaching spelling. Visual, kinesthetic, and tactile modes of learning were employed by the students for word mastery. Results of the study showed that the students learned a significantly larger number of words during the experimental program as compared to the number of words learned in the previous regular spelling program.

In constrast Simon and Simon (9) were concerned with a structured approach in their investigation of methods of teaching spelling. The purpose of the study was to distinguish different ways in which phonemic information may be utilized in spelling. Gathering data, formulating hypotheses, and implications for teaching and learning of spelling were also considered. In the study the students achieved word mastery by memorizing and applying phonic rules. Results of the study confirmed that learning phonic rules and generalizations does not assure mastery of spelling.

Treffinger (12) implied that an independent, self-directed method of teaching is an adequate means of instruction for the highly creative individual. According to Coletta (2) the teacher should be aware of the appropriate methodology for the high creative and low creative student and instruct them accordingly. Results of a study by Wright (15) indicated that through the use of instruments designed for that purpose it is possible to identify teaching strategies more appropriate for different learners. Torrance (11) cited a number of studies that indicated that different kinds of children achieve more when they are provided learning experiences that are adapted to their motivations and abilities. The evidence available supports the theory that when the methods of teaching are varied, a different group of children become the high achievers.

Warren noted that relatively little research has been conducted comparing the different methods of teaching in relation to creativity (13). Wood and Larson (14) concluded that although much research has been conducted concerning teaching creatively to children, there is a paucity of research concerning variations in methods of teaching in relation to creativity. It was to this question that this research was directed. Will high creative and low creative children achieve differently when utilizing a divergent method of teaching as opposed to a convergent method of teaching as evidenced by achievement in spelling?

Method

Sample

The accessible population consisted of 79 third grade children enrolled in one elementary school. They were randomly grouped into four sections. Groups numbered one and two were assigned to the convergent method (Subject Group No. 1) and groups three and four were assigned to the divergent method (Subject Group No. 2). The teachers participating in the study comprised the total population of third grade teachers in the school. A t-test was computed on the means of the pretest scores to determine that the groups were equal.

Procedure

The study was conducted for a period of 18 weeks. The children participating in the study were administered two pretests, Torrance's Thinking Creatively With Sounds and Words (10), and a teacher constructed Unit Spelling Test. The Torrance Tests of Creative Thinking were used to identify the high and low creative children. The Unit Spelling Test was used to determine achievement in spelling. The posttest, the Unit Spelling Test, was administered to all the children at the end of the study.

Each group was provided a 25 minute daily spelling period for four days a week. Each spelling class was taught during the same time period. A list of 15 words per week were studied by each of the groups using different methods.

The teachers used highly structured learning activities for the groups utilizing the convergent method. A major emphasis was placed upon acquiring and applying phonetic rules and generalizations to the list of works to be mastered as outlined in the manual for Basic Goals in Spelling (6).

The group receiving instructions by the divergent method utilized less structured learning activities. This method was student centered in that the children were allowed to choose any means available to master the words. A learning center was provided that contained word puzzles, flash cards, games, and a language master. The children were encouraged to devise their own methods for mastering the words by encouragement from the teacher, and by exhibiting and displaying the methods they devised in the classroom. The teachers kept a daily record of the activities and materials used by the children.

At the end of 18 weeks, each group was administered a posttest to determine if high creative and low creative children would achieve differently using convergent and divergent methods of teaching and to see if there was an interaction of the two variables.

Analysis of Data

Achievement of the High and Low Creative Children

An analysis of covariance was computed to compare spelling achievement of high creative children with low creative children. The analysis employed the posttest scores in the Unit Spelling Test as the criterion variable and the pretest measure derived from the same instrument as the covariate. Data summarizing the results of the analysis of covariance model comparing the spelling achievement of high creative with low creative children on the Unit Spelling Test are given in Table 1. When the variance between the means of the high creative children and low creative children was compared, no significant difference was found at the .05 level.

Means of Children in the Different Groups

The analysis of covariance was performed by using data from each of the subgroups as well as the total scores of the Unit Spelling Test. The idependent variable was the method of instruction. The criterion variable was achievement. As noted in Table 2, the children participating in the divergent method have a higher posttest means in spelling achievement, whereas the children participating in the convergent method have a lower posttest means in spelling achievement. However, when the adjusted means for the children taught by the two methods

Table 1

Analysis of Variance Illustrating the Effects of Treatment X Creativity Level on Spelling Achievement

Source of Variations	df	Mean Squares	F Ratio
Covariate			
Pretest	1	2771.410	52.693
Main Effects			
Method	1	8.242	.157
Creativity Level	1	31.216	.593
Method X Level Interactions	1	51.433	.478

$F \geq 3.98$ Significant at .05 (df 1, 74)

Table 2

Adjusted Posttest Means for Subgroups of Students in Spelling Achievement

Groups	Means
Method	
Divergent	40.63
Convergent	39.98
Creativity Level	
Low	39.66
High	41.15
Method X Level	
Divergent Low	39.97
Divergent High	41.46
Convergent Low	39.32
Convergent High	40.81

were compared, the analysis of covarience model yielded an F ratio of .157, which was less than the critical value of $F \geq 3.98$. These data indicated no significant difference in the achievement of the two groups at the .05 level.

Interaction of Methods and Creativity

An analysis of covariance was performed on the achievement data. The criterion variable was achievement and the independent variable was the interaction of method of teaching and creativity. As noted in Table 3, the interaction of the method and creativity level indicates that the high creative children scored higher than the low creative children on both the pretest and posttest. There appears to be little difference in the achievement of the high creative children taught by the divergent method and the high creative children taught by the convergent method. The analysis of covariance indicated an F ratio for interaction of .978 which was not significant at the .05 level.

Conclusions

The results of the study indicated that there is no significant difference in achievement between the high creative and low creative children. These findings are supported by Renzulli and Smith (8) who ascertained that methods employed for high creative children worked equally well with low creative children. The second conclusion of the study indicated that there is no significant difference in achievement between children taught by a convergent

Table 3

Pretest and Posttest Means and Standard Deviations

for Subgroups in Spelling Achievement

Groups	Pretest		Posttest	
	Means	S.D.	Means	S.D.
Method				
Convergent	22.9474	15.2456	39.6842	9.4900
Divergent	24.3171	14.8702	40.9024	9.2109
Creativity Level				
High	32.5429	14.2588	44.4571	7.2043
Low	16.5909	11.4207	37.0227	9.5394

method and children taught by a divergent method. In similar studies Hahn, Johnson, and Brandt found no difference in achievement between groups of children taught by different methods (3, 5, 1). In opposition to these findings are studies conducted by Hill and Martinis who found children using a divergent type of method achieved more than those using a traditional method (4). Phelan also reported a significant difference in achievement between groups of children participation in a structured method and groups of children participating in a less-structured method with the groups using the less structured method achieving more (7). The third conclusion of the study indicated that there is no significant interaction between teaching method and creativity. This indicates that high creative children and low creative children achieve as well using a divergent method of teaching or a convergent method of teaching.

Implications

This study indicated that low creative children achieve as well as high creative students. These results should influence teacher expectancy of low creative children. The study also indicated that a convergent method of teaching is not superior to a divergent method of teaching.

It would be informative to determine if a significant difference in retention occured between the groups. This could be accomplished by administering the posttest to the

same subjects at a later date. Would other measures of creativity yield the same indentification of high creative and low creative children as the Torrance Tests of Creative Thinking? This question may be answered by administering a different creative measure to the same subjects and comparing the results with the Torrance Tests of Creative Thinking. More research is needed concerning the relationship between creativity and methods of teaching to determine if creativity may be enhanced using different methods of instruction.

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